TECHNICAL REVIEW DOCUMENT
FOR
RENEWAL
OF
OPERATING PERMIT 95OPMR050
issued to:

Western Sugar Cooperative - Fort Morgan Facility
Morgan County
Facility ID 0870001

Michael E. Jensen
October 17, 2002

I. PURPOSE:

This document will establish the basis for decisions made regarding the applicable requirements, emissions factors, monitoring plan and compliance status of emission units covered by the renewed Operating Permit proposed for this site. The original Operating Permit was issued May 1, 1998, and expires on May 1, 2003. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted March 27, 2002, previous inspection reports, E-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Colorado Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This Operating Permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this Operating Permit without applying for a revision to this permit or for an additional or revised construction permit.

II. SOURCE DESCRIPTION:

This facility changed ownership during the renewal of this Operating Permit and became The Western Sugar Cooperative. The facility manufacturers sugar and sugar by-products from sugar beets in an annual 5-month period that starts in about mid-September. This period of operation, which can range from about 100 to 170 days and averages about 140 days, is called a "campaign". During the campaign the plant is in operation for 24 hours/day, seven days per week until all harvested beets have been processed. The exception to this is the sugar storage bins and associated dust collectors that operate year around as sugar is shipped. Preventive maintenance and overhaul activities are performed during the off-campaign months.

The facility, classified under Standard Industrial Classification code 2063, is located just north of the city limits of Fort Morgan. The plant is bordered by Interstate 76, State Highway 52, and State Highway 144. There are no affected states within 50 miles of the plant. There is no Federal Class I

designated area within 100 kilometers of the plant.

The plant is located in an area designated as attainment for all pollutants. It is categorized as a major stationary source (Potential To Emit (PTE) > 250 Tons Per Year (TPY)) for nitrogen oxides, carbon monoxide, sulfur dioxide and particulate matter. Future modifications at this plant resulting in a significant net emissions increase (See Colorado Regulation No. 3, Part A, Section I.B.37 and 58) for any pollutant as listed in Colorado Regulation No. 3, Part A, Section I.B.58 or a modification that is major by itself may result in the application of the PSD review requirements.

Facility-wide emissions are as follows:

	POTENTIAL TO EMIT, TONS PER YEAR				
SOURCE	NOx	CO	SO_2	VOC	PM
Main Boilers (2)	1339.28	478.32	3090.53	6.70	240.37
Pulp Dryers (2)	41.39	491.44	6.31	82.34	231.35
Pellet Mills (4)					80.77
Sugar Granulators (2)					172.57
Summer Boiler	4.49	3.77	0.03	0.25	0.32
Conveyor & Silo Filling (Existing)					145.85
Lime Slaker					67.23
Sugar Production					9.29
Fugitive Dust					56.00
TOTALS	1385.16	973.53	3096.87	89.29	1003.75
Data Year 2001 Actual Emissions	329.2	157.0	18.3	8.7	98.9

The Potential To Emit (PTE) is based on the Colorado Construction Permit limits for those sources with Construction Permits. The PTE for particulate matter or sulfur dioxide emissions, as appropriate, for the other sources is based on the Colorado Regulation No. 1 hourly limits and the operation of equipment at 8760 hours/year without any controls. Actual emissions are from the Division emission inventory for Data Year 2001.

III. Emission Sources:

A. Two Babcock and Wilcox Stoker-Coal-Fired Steam Boilers each rated at 196 MMBtu/hour equipped with Detroit Stoker Model Rotograte RG-4 #2016 and 2017 (Job # RG 859)

The boilers were originally constructed in 1947 to burn coal. At that time, no emissions control program was in place. The boilers were converted to fire natural gas in the 1960's and in September of 1975, an application was made to convert the boilers to coal and install a venturi scrubber system for controlling emissions. Each boiler was equipped with a venturi scrubber system and the two boilers connect to common stack provided with a mist eliminator. Final Approval of Construction Permit C-11, 262 was issued to The Great Western Sugar Company on March 21, 1978. A subsequent transfer of ownership to the Western Sugar Company resulted in the permit being re-issued as 11MR262 on December 24, 1986.

A1. Applicable Requirements- The renewal application reported the boiler heat input should be shown as 196 million Btu per hour and not as 145 million Btu per hour as previously reported.

Particulate matter and sulfur dioxide emission limits were set by Construction Permit 11MR262. The sulfur dioxide emission limit matches the limit of Colorado Regulation No. 1, Section VI.A.3.a.(i). Colorado Regulation No. 1, Section III.A.1.b sets a particulate matter emission limit with the equation: $PE = 0.5 (FI)^{-0.26}$, where PE is the Particulate Emissions in pounds per million Btu and FI is the Fuel Input Rate in MMBtu/hr. The Construction Permit particulate matter emission limit matches the 0.14 pounds per million Btu of heat input limit that would be calculated by the equation based on 145 million Btu per hour of heat input. The corrected boiler heat input of 196 million Btu per hour would result in a slightly lower particulate matter emission limit of 0.13 pounds per million Btu. Western Sugar requested the Construction Permit limit be modified directly in this Operating Permit to set a new particulate emission limit of 0.13 pounds per million Btu.

Both the Construction Permit limit and the Regulation No. 1 equation are applicable requirements. The subtle difference in the two is the equation sets an increasingly higher emission limit as the heat input decreases. The equation sets a particulate matter emission limit for the emissions from each boiler at 0.13 lbs/MMBtu.

The two boilers use a common stack and the allowable emissions from the stack are 0.13 lbs/MMBtu. The version of Colorado Regulation No.1 that existed at the time the existing Operating Permit was issued included confusing language for determining the emission limit for the situation of a common stack for multiple sources. In Western Sugar's case, it appeared that the limitation should be 0.13 + 0.13 = 0.26 lbs/MMBtu. However, that was not the case. Since the previous Operating Permit was issued, Colorado Regulation No. 1, Section III.A.1.d has been changed to read "If two or more fuel burning units connect to any opening, the maximum allowable emission rate shall be calculated on a lb/million heat input (BTU) basis as calculated from a weighted average of the individual allowable limits for each unit to the common stack."

As noted above the Regulation No. 1 equation sets a particulate emission limit of 0.13 lb/MMBtu for each of these boilers.

Boiler #1 196 MMBtu/hr X 0.13 lb/MMBtu = 25.48 lb/hr
Boiler #2 196 MMBtu/hr X 0.13 lb/MMBtu = 25.48 lb/hr
392 MMBtu/hr 50.96 lb/hr

$$\text{Weighted Average: } \frac{50.96 \text{ lb/hr}}{392 \text{ MMBtu/hr}} = 0.13 \text{ lb/MMBtu}$$

As discussed for the existing Operating Permit, the lack of an approved continuous emission monitor for particulate matter precluded monitoring compliance with the Construction Permit requirement for maintaining a particulate matter removal efficiency of 97.6%. The existing Operating Permit requires a performance test once every five (5) years to demonstrate maintenance of the control equipment. The required performance test is scheduled for October 22, 2002. Any significant findings from the performance test will be incorporated into the permit along with any public notice comments received.

A2. Emission Factors- These boilers use a Detroit Stoker coal feeder to burn bituminous coal. With this type of unit a mechanical or pneumatic feeder distributes the coal uniformly over the surface of a grate moving in the opposite direction. This creates a suspension burn and a thinner fast-burning fuel bed. The amount of fuel fed depends upon the fuel size and composition as well as air flow velocity.

Emission factors are obtained from compliance test data when available, or from the EPA AP-42 reference manual if no test data is available. The use of a sulfur dioxide emission factor from a compliance test requires monitoring the coal sulfur content between tests to demonstrate the coal sulfur content remains consistent. In like manner, the use of a particulate matter emission factor from a compliance test requires some method to monitor the performance of the control equipment between tests.

Western Sugar uses emission factors from the EPA AP-42 reference manual to estimate emissions for all pollutants except particulate matter and sulfur dioxide. The particulate matter and sulfur dioxide emission factors were obtained from an October 22, 1996, compliance test. The factors used represent the emissions after the venturi scrubber and include a safety factor.

The emission factors used are listed below:

	Emission Factor, lb/ton of coal	
Pollutant	Western Sugar	AP-42 (Ver 9/98)
PM	1.76 (controlled)*	66 (1.00-0.976) = 1.58
PM_{10}	0.288 (controlled)	13.2 (1.00-0.976) = 0.317
SO_2	0.777*	35 (S)** 35 X 0.25 = 8.75 X (1.00-0.9) = 0.875
NOx	14.0	8.8
VOC	0.07	0.05
CO	5.0	5.0

* From October 22, 1996 Stack Test

**Where (S) is the weight percent of sulfur in the coal. The weight percent is multiplied by the emission factor to give an adjusted emission factor that is adjusted for the coal sulfur content. APEN shows coal sulfur as 0.25%.

A3. Monitoring - The source monitors fuel usage by daily tracking of the number of coal cars used to fuel the boilers. On an annual basis, the number of coal cars, coal shipment data, and leftover coal are used to calculate the amount of coal used during the year.

Additionally, the sulfur, sodium, ash, and heat content of the coal burned is determined using American Society for Testing and Materials (ASTM) standards on each occasion that coal is delivered. The test results are used in emissions calculations and to demonstrate compliance with sulfur and ash/sodium limitations. The coal sulfur monitoring satisfies the requirement under Colorado Regulation No. 1, Section IV, to have a Division approved sampling plan in order to calculate sulfur oxide emissions on any fossil fuel fired steam generator with a total rated capacity equal to or greater than 250 million Btu per hour heat input. Western Sugar has determined compliance with the particulate standard is dependent upon the composition of the coal burned. Specifically, emissions tests performed in December,1995 and October,1996 found that the facility can demonstrate compliance when the coal sodium content is less than 0.25 pounds per million Btu or the ash to sodium ratio is greater than 40. The sodium content in the ash appears to alter the slagging and burn characteristics of the coal and, in this instance, reduces particulate emissions.

Compliance with the Colorado Regulation No. 1 particulate matter emission standard is determined on a monthly basis using the heat content of the fuel burned and the compliance test emission factor. Compliance with the Colorado Regulation No. 1 sulfur dioxide emission standard is determined on a monthly basis using the heat content of the fuel burned and the emission factor. The calculated values are then compared to the standards. Additionally, a stack test is required every 5 years from the date of permit issuance as an additional compliance check for the particulate matter and sulfur dioxide values (lbs/MMBtu) and to ensure scrubber integrity. Results from the stack test indicating a failure to meet the limit for particulate matter or sulfur dioxide will be considered an exceedance of the Operating Permit terms and may result in a re-opening of the permit to adjust the level and/or frequency of monitoring.

Emissions from the boilers are not to exceed 20% opacity as measured using EPA Method 9. Opacity observations must be performed by certified personnel. During normal operation an opacity observation is performed within one calendar day of concluding boiler startup and every other week thereafter. The startup period begins when a fire is first lit and ends when sufficient steam pressure is present to operate the wet scrubbers. If eight (8) weeks worth of recorded data show that the opacity did not exceed 10%, then the frequency may be moved to a monthly basis. Any opacity over 10% will result in the frequency reverting to every other week. Note that the 10% opacity requirement (also included for the other sources) is not a regulatory standard, but is used only as a means to control the monitoring frequency. Colorado Regulation No.1 also allows, under certain circumstances (fire building, cleaning of fire boxes, soot blowing, start-up, process modification or adjustment of control equipment), for opacity to exceed 20% but not more than 30%. Start-up is initiated when a fire is first lit for the boilers. Start-up is complete when sufficient steam is generated to begin operating the scrubbers. Under these situations, an opacity reading is taken within 24 hours of startup and every calendar day thereafter during startup. This includes any period when the boilers are backed-down such that steam pressure is unavailable for the wet scrubbers. A startup parameter report previously submitted to the Division shall be used for defining the operating state of the boilers.

The boiler emissions are controlled by an American Standard (Series 361) fly ash collector and two low-energy venturi "wet" scrubbers with a combined stack containing a chevron-type mist eliminator. The control system is subject to the Compliance Assurance Monitoring (CAM) provisions. The Division approved CAM plan is included in Appendix G of this Operating Plan. The CAM plan is essentially a continuation of the parametric monitoring performed under the existing Operating Permit.

A4. Compliance Status – The Division accepts that the source was in compliance with the existing Operating Permit requirements at the time this renewal is issued.

B. Two Stearns/Rogers, Peabody Type MU24 (Order # 32971, 34882 -1952), Natural Gas Fired Beet Pulp Dryers Rated at 50 MMBtu/hr Each.

Pulp which has had the majority of its sugar content removed is pressed by pulp presses to reduce the moisture content to approximately 75%. The pulp then enters the two (North and South) natural gas fired drum-type pulp dryers, which reduce the moisture to about 10%. The dried pulp is delivered to a conveyor system while emissions from each dryer are exhausted through two sets (for each dryer) of 4 Emtrol cyclones. Material dropped out in the cyclones is added to the dried pulp

conveyor.

B1. Applicable Requirements- These dryers went into service in 1954. In 1987 three permits (87MR196 1-3) were issued for a project to modify the units to burn coal. The project was continually delayed and the permits expired on January 28, 1994. Because the dryers were constructed prior to February 1, 1972, the units are considered grandfathered from construction permitting requirements. The dryers are subject to the Colorado Regulation No. 1, Section III.C.1.a particulate matter standard for manufacturing processes set by the equation $PE = 3.59 (P)^{0.62}$ where PE = particulate matter emission rate in pounds per ton of production and P = Process weight rate in tons per hour. The dryers are also subject to the 20% opacity limitation, and the payment of annual emission fees.

The pulp dryers are equipped with cyclones to capture the dried pulp. The cyclones are considered an integral part of the process and are not provided for control of air pollution emissions. The dryers are not subject to any emission limits requiring the use of a control device in order to demonstrate compliance with the limit. On the basis of these considerations, a Compliance Assurance Monitoring (CAM) plan is not required.

B2. Emission Factors - Emissions from a portion of the process are produced from the combustion of natural gas and the drying pulp adds particulate matter to the emissions.

The December, 1994, test results for the North Dryer are presented in the following table. It should be noted that the listed particulate matter emission rate was after the cyclones. The test emission factors were converted to a pounds per ton of beet pulp throughput using the maximum process rate of 25 tons per hour for the existing Operating Permit.

POLLUTANT	TEST EMISSION FACTOR	CONVERTED EMISSION FACTOR
	Lbs/Hr	Lbs/Ton Pulp
PM	14.1	0.564
PM_{10}	14.1	0.564
SO_2	0.72	0.0288
NOx	4.73	0.189
VOC	9.4	0.376
CO	56.1	2.244

B3. Monitoring – The particulate matter emissions limit set by the equation $3.59 (P)^{0.62}$ for the maximum production rate of 25 tons per hour yields an emission limit of 26.41 pounds of particulate matter per ton of pulp production. The table above shows a converted emission factor of 0.564 pounds of particulate matter per ton of pulp production. The previous Technical Review Document noted the dryers could not be out of compliance with the particulate matter limit of 25.6 pounds per ton and an emission factor of 0.564 pounds per ton Since Western Sugar is already required to record the pulp throughput, no additional monitoring requirements are needed.

Conditions 2.1 to 2.6 of the Operating Permit list the monitoring and record keeping provisions necessary to verify compliance with applicable requirements for these dryers. Because the emission factors take fuel combustion and process rates into account, Western Sugar tracks the beet pulp throughput and operating hours to calculate emissions. However, the proper operation of the

cyclones is vital to ensuring compliance with the particulate standard(s). Therefore, permit language requires that the cyclones be maintained and operated in accordance with the manufacturer's instructions to minimize emissions and ensure compliance with the particulate and opacity standards. Records of cyclone maintenance shall be maintained.

Compliance with the opacity standard was demonstrated initially by a monthly EPA Method 9 visual observation. If for the first campaign no observation results (6 minute average) found opacity above 10%, then Western Sugar was allowed to perform one EPA Method 9 observation per campaign. Any EPA Method 9 result (6 minute average) above 10% requires Western Sugar to perform monthly opacity observations for a period of one year. Additionally, visual checks for visible emissions are conducted monthly. Because this source typically emits steam along with some opacity, Western Sugar will need to verify that the process and control equipment are operating properly. Western Sugar will also perform any maintenance or adjustments necessary to minimize emissions/opacity and ensure proper operation. Finally, the control equipment must be in operation when the manufacturing process is operating.

B4. Compliance - No compliance problems have been noted for these units. The units are currently considered in compliance with all applicable requirements.

C. Emission Unit S003 - Four Beet Pulp Pellet mills and Coolers.

The dried pulp from the pulp dryers (S002) is fed to an "elevator" and then another conveyor to be fed to four pellet mills. The mills compress the dried pulp into hard pellets for livestock feed. Cooling fans move the emissions from the pellet mills through a common in-house designed cyclone. Dropout from the cyclone is recycled to the pellet mills.

C1. Applicable Requirements - The units were installed and began operation in 1953. The pellet mills are considered grandfathered from the construction permitting requirements since they were constructed prior to February 1, 1972. Because the emission units are grandfathered, there are no specific annual emission limitations. However, emissions of these pollutants must still be calculated for fee and inventory purposes.

The pellet mills are subject to the particulate standard for manufacturing processes just like the pulp dryers (S002). Total production is given as 14 tons/hour (TPH) for all four pellet mills (Title V Application, P003, Form 306). The Colorado Regulation No. 1 manufacturing equation results in a particulate emission limit of 18.44 pounds per hour at this production rate. The mills are also subject to the 20% opacity limit.

C2. Emission Factors - No specific emission factors for beet pulp pellet mills are available. The Western Sugar factory in Billings, Montana test results identified an emission rate of 0.138 pounds per ton for their pellet mills. However, the controls for the mills were slightly more stringent and the factors are not completely transferable. The EPA AP-42 reference document lists emission factors for operations at alfalfa dehydrating plants. The basic operation of a beet pulp pellet mill is similar to that at an alfalfa dehydrating plant. Therefore, the pellet mill cooler cyclone AP-42 emission factor was analyzed for compatibility. The emission factors are:

TABLE 6.1-1 and SCC: 3-02-001-02

Pollutant	Emission Factor Lbs/Ton Product
PM	3.0
PM_{10}	1.8

The listed emission factors apply to emissions calculated from tons of finished product. Should calculations be made using the amount of "wet feed" to the dryers, AP-42 suggests that the emission factor be divided by a factor of 4 to compensate for the increased throughput weight due to higher input moisture content (i.e. input tonnage is approximately 4 times the output tonnage due to moisture loss). Each pellet mill then has an emission rate of 0.75 lbs/ton for PM and 0.45 lbs/ton for PM_{10}. While Western Sugar will not be using the "wet feed" throughput, it appears from the Billings data that the emissions are closer to 0.75 lbs/ton than they are to 3.0 lbs/ton. Therefore, the 0.75 lbs/ton emission factor will be used based upon best engineering judgment. Because each pellet mill is identical, total emissions are the equivalent of a single mill processing all of the pulp. For simplicity, calculations in the permit assume a single mill processes all of the pulp. Western Sugar measures the amount of "wet feed" to the dryers as well as the "wet feed" moisture content and resultant "dry pulp" moisture content. The amount of dry pulp sent to the pellet mills is then calculated based upon the amount of original "wet feed" and the moisture loss through the dryers.

C3. Monitoring - Conditions 3.1 to 3.4 of the Operating Permit list the monitoring and recording provisions necessary to verify compliance with applicable requirements for these units. The tonnage of dry beet pulp sent to the mills is measured and recorded on a monthly basis along with the mill's monthly operating hours. The cyclone shall be maintained and operated in accordance with good operating procedures to minimize emissions and ensure compliance with the particulate and opacity standards. Records of maintenance are kept. Compliance with the opacity requirement is monitored using the same procedures discussed for the pulp dryers.

C4. Compliance - No compliance problems have been noted for this emission unit. This source is currently considered in compliance with all applicable requirements.

D. Emission Unit S004 - Two Sugar Granulators (East and West) consisting of Two Steam Heated Rotary Dryers and Two Ambient Air Cooled Rotary Coolers.

Partially wet spun sugar from the white centrifugals moves by conveyor to one of two sugar granulators to be dried and cooled as part of the crystallization and separation process. The rotary granulator dryers are heated using steam produced from the main boilers (S001) while the sugar moves transverse to the inlet air and steam. Each granulator is equipped with a water spray dust box. The hot sugar drops to the sugar coolers that are essentially identical to the granulator dryers except that the transverse inlet air is not heated. The exhaust from the dryers and coolers enters one of two large area ducts where water is sprayed across the top. The exhaust gas streams from the coolers are combined and routed through one fabric filter dust collector. Water and sugar dust are returned to the process.

D1. Applicable Requirements - The exact date of construction for these units is unknown, however, Western Sugar places it prior to 1950. It should be noted that the sugar processing facility

was constructed in 1906 and much of the equipment installed during the last 50 years is still in use today. Because these units were constructed prior to February 1, 1972, they are considered grandfathered from construction permitting requirements. However, emissions of these pollutants must still be calculated for fee and inventory purposes.

As with pulp dryers and the pellet mills the emission units are subject to the particulate standard for manufacturing processes. The allowable Particulate Emissions (PE) rate for each granulator, set by the manufacturing equation of Colorado Regulation No. 1, at the 15.625 tons per hour maximum design process weight rate (per granulator), is 19.7 pounds per hour. The units are also subject to the 20% opacity limitation.

D2. Emission Factors - Specific emission factors for these activities are not available from published sources. The emission factors used in the Operating Permit are based on Western Sugar's best engineering judgment and include the removal efficiency of the control device. It is assumed that PM is equal to PM_{10}. The emission factors are listed below.

Pollutant	Emission Factor Lbs/Ton Sugar Throughput
PM	0.08
PM_{10}	0.08

D3. Monitoring - Conditions 4.1 to 4.4 of the Operating Permit list the monitoring and recording provisions necessary to verify compliance with applicable requirements for these granulators/coolers. The throughput tonnage of sugar is measured and recorded on a monthly basis along with each granulator's operating hours. The granulator dryer water spray dust boxes and the fabric filter for the cooler exhaust shall be maintained and operated in accordance with good operating procedures to minimize emissions and ensure compliance with the particulate and opacity standards. Records of the maintenance are kept.

This source has historically not had visible emissions other than steam. Compliance with the opacity standard is demonstrated by a monthly visual check (not EPA Method 9) of emissions. Should opacity, other than steam, be observed, the manufacturing process and control equipment will be checked for proper operation and corrected/adjusted if necessary. An additional visible check will be conducted after examining the process and control equipment. If visible emissions still persist, EPA Method 9 opacity observation must be performed. Should an EPA Method 9 observation result (6 minute average) show opacity above 10%, Western Sugar is required to perform monthly EPA Method 9 observations for the next four (4) months. Western Sugar will continue these observations into the next campaign should the plant cease operating prior to the completion of this requirement. If no further instances of opacity above 10% are observed, then Western Sugar may continue with the original monitoring scheme requiring monthly visual checks. As mentioned above, the control equipment must be operating during the manufacturing process.

D4. Compliance - No compliance problems have been noted for these activities. The activities are currently considered in compliance with all applicable requirements.

E. Emission Unit S006 - Conveyor Transfer Points and Silo Filling.

Finished sugar is transferred to silos via enclosed conveyors. The process is entirely indoors. An interior air handling system collects air-borne sugar from various pick-up points and by way of a Wheelabrator 126-D, Sock Type Dust Collector allows the facility to recoup sugar which otherwise might go to atmosphere or be disposed of as waste.

A project to upgrade the control equipment identified in the existing Operating Permit is still pending. The project involves installing two Sly PleatJet baghouses for dust collection from conveyors, elevators, productions scales, screens, and bins. A MikroPulsaire baghouse will also be installed for the powered bin vents. This modification will reduce potential emissions while meeting the most current National Fire Protection Association codes for the prevention of dust fires and explosions. Western Sugar requested the permit conditions for this project be retained in this renewal of the Operating Permit.

E1. Applicable Requirements - The collection device was installed and began operation in 1959. Because this unit was constructed prior to February 1, 1972, it is considered grandfathered from construction permitting requirements. The upgrade in control equipment is not considered a modification since there will be a decrease in emissions.

The emissions associated with this activity are subject to the particulate standard for manufacturing processes. The following equation from Colorado Regulation No. 1, Section III.C.1.b applies because the sugar is transferred at a rate greater than 30 tons per hour:

$PE = 17.31(P)^{0.16}$ where P = Process weight rate in tons per hour, and
PE = Particulate Emission limit in pounds per ton of material processed

The given maximum design process weight rate of 60 tons per hour results in particulate emissions limit of 33.3 pounds per hour. The activities are also subject to the 20% opacity standard.

E2. Emission Factors - The emission factors for the original control equipment and transfer/conveying from the EPA AP-42 reference document are:

Pollutant	Emission Factor Lbs/Hr Sugar throughput	Emission Factor Lbs/Ton Sugar
PM	3.43	0.057
PM_{10}	1.72	0.029

The upgraded control equipment emission factors are based upon manufacturer guarantees and air flow rates. The emission factors are:

Pollutant	Emission Factor Lbs/Hr Sugar throughput	Emission Factor Lbs/Ton Sugar
PM	0.778	0.013
PM_{10}	0.386	0.0064

For the existing Operating Permit pounds per hour emission factors were converted to a pounds per ton of sugar throughput using the maximum process rate of 60 ton/hr.

E3. Monitoring - Conditions 6.1 to 6.4 of the Operating Permit list the Monitoring and Recording provisions necessary to verify compliance with applicable requirements for the original "Wheelabrator" setup while 6.5 to 6.8 cover the upgraded control equipment.

As noted in the applicable requirements discussion just above a particulate emissions limit of 33.3 pounds per hour is set by equation $17.31(P)^{0.16}$ for a 60 ton per hour process rate. Since the emission factor is 0.057 pounds per ton of sugar and the emission limit is33.3 tons per hour the source will always be in compliance. Western Sugar need only retain a copy of this analysis on file for demonstrating compliance. The project to change the control equipment will not alter the validity of the analysis.

Monthly records of the hours of operation, sugar production during the beet campaign, and the quantity of sugar shipped during the Intercampaign are maintained for calculating emissions for compliance, fee, and inventory purposes. The control device shall be maintained and operated in accordance with good operating procedures to minimize emissions and ensure compliance with the particulate and opacity standards. Records of maintenance will be kept. As with the sugar granulators (S004), this emission unit has a history of no visible emissions. Compliance with the opacity requirement is identical to that described for granulators. Western Sugar has expressed concerned about the feasibility of performing a Method 9 observation because the exhaust point is between silos, the silos are white, the exhaust (sugar) is white, and the sun angle is poor. The Division understands the concerns and accepts that it may be difficult to identify any opacity non-compliance. It is noted that it has not yet been necessary for a Method 9 observation to be performed to satisfy the monitoring requirements. From that perspective the problem of performing a proper Method 9 observation may be a concern but has yet to be a problem.

E4. Compliance - No compliance problems have been noted for these activities. The activities are currently considered in compliance with all applicable requirements.

F. Emission Unit S007 - Slaking/Hydration of Calcium Oxide from Lime Kiln

F1. Applicable Requirements - Burned lime from the lime kiln goes to the lime slaker where it is mixed with sweetwater (filtrate and wash water from the purification and filtration processes) and produces milk of lime. The milk of lime is used to precipitate non-sugars by gradually elevating the pH. Steam and dust from the lime slacker is sent to the slaker vent that is controlled by a Ducon Wet Scrubber.

The unit was installed and began operation in 1959. A Ducon Wet Scrubber was added in 1992. The addition of the scrubber did not meet the definition of a modification since the project involved an emission control device and the emissions decreased. Because this unit was constructed prior to February 1, 1972, it is considered grandfathered from construction permitting requirements.

As with pulp dryers and the pellet mills the emission units are subject to the particulate standard for manufacturing processes. The allowable Particulate Emissions (PE) rate from the manufacturing equation of Colorado Regulation No. 1, at the 10.42 tons per hour maximum design process weight rate, is 15.35 pounds per hour. The slaker vent is also subject to the 20% opacity limitation.

F2. Emission Factors - Specific emission factors for this activity are not available from published sources. The emission factors used in the operating permit were based on emission stack testing at Western Sugar's Scottsbluff, Nebraska facility. PM_{10} emissions were tested and it was assumed that PM was equal to PM_{10}. The emission factors are listed below.

Pollutant	Emission Factor Lbs/hr	Emission Factor Lbs/Ton Limestone
PM	0.57	0.055
PM_{10}	0.57	0.055

The Scottsbluff emissions are on an uncontrolled basis. In calculating emissions for the Fort Morgan facility, a minimum control efficiency of 50% is given to the Ducon Wet Scrubber based upon best engineering judgment. The emission calculations are extremely conservative even with the control efficiency included.

For the existing Operating Permit the emission factors were converted to pounds per ton of limestone used using the maximum process rate of 10.42 ton/hr.

F3. Monitoring -Conditions 7.1 to 7.4 of the Operating Permit list the Monitoring and Recording provisions necessary to verify compliance with applicable requirements for this activity. The particulate matter emissions limit set by the equation $3.59\ (P)^{0.62}$ for the maximum production rate of 10.42 tons per hour yields an emission limit of 15.35 pounds of particulate matter per ton of lime processed. The table above shows a converted emission factor of 0.55 pounds of particulate matter per ton of lime processed. The previous Technical Review Document noted the slaker could not be out of compliance with the particulate matter limit of 15.35 pounds per ton and an emission factor of 0.55 pounds per ton.

The source is required to track operating hours and limestone use on a monthly basis for use in calculating emissions for fee and inventory purposes. The control device shall be maintained and operated in accordance with the manufacturer's specifications to minimize emissions and ensure compliance with the particulate and opacity standards. Records of maintenance are kept. As with granulators, this emission unit has a history of no visible emissions. Compliance with the opacity requirement is identical to that described for the granulators.

F4. Compliance - No compliance problems have been noted for this emission unit. This source is currently considered in compliance with all applicable requirements.

G. Emission Unit S008 - Fugitive Dust Emissions from Truck Traffic and Exposed Grounds

G1. Applicable Requirements - The activities noted have been in operation prior to February 1, 1972 and are considered grandfathered from construction permitting requirements. Traffic is approximately 400 trucks per week during the Beet campaign. The majority of these trucks unload beets to a beet pile. Later, the beets are hauled from the storage pile and dumped into a wet hopper. The facility also ships finished product (pulp pellets and sugar) 52 weeks per year at a rate of about 100 trucks per week as well as general miscellaneous traffic. Exposed areas such as the general plant grounds, mud ponds, lime ponds and ash lifts are also sources of fugitive emissions.

Control measures and operating procedures are employed as necessary to minimize fugitive particulate emissions into the atmosphere (Colorado Regulation No. 1, Section III, Part D). Western Sugar has not yet been required to submit a fugitive dust control plan. However, a control plan may be required should the Division determine that visible emissions are in excess of 20% opacity; or visible emissions are being transported off the property; of if the activities are operating to create a nuisance.

G2. Emission Factors - Specific emission factors for these activities are available from AP-42, Section 11.2. Fugitive particulate emissions from this facility are not used in determining Prevention of Significant Deterioration (PSD) applicability. Additionally, Colorado does not charge annual emission fees for fugitive emissions. Therefore, the source is not required to calculate fugitive emissions for purposes of this permit.

G3. Monitoring - Control measures and operating procedures shall be employed as necessary to minimize fugitive particulate emissions into the atmosphere. These may include, but are not limited to, watering or chemical stabilization of unpaved roads; restricting the speed of vehicles; revegetation or reclamation; or the minimization of disturbed land.

G4. Compliance - No compliance problems have been noted for these activities. The activities are currently considered in compliance with all applicable requirements.

H. Emission Unit S010 - Two Powder Mills
S013 - Production Powder Sugar Line Packer
S014 – Fine Granulated Sugar Industrial Bag Packaging line & Warehouse
S015 – Selected Powdered Sugar Packaging Line Points & Starch Unloading

Two classifying mills grind sugar and mix it with starch to produce powdered sugar. Each mill sends the sugar to a Fabric Filter Air system (Model 121R-10-TRL) fabric filter control system (S010). The filters contain the sugar and feed it to a packaging line. Emissions from the powdered sugar production line packer are routed to a Hosakawa/Mikro-Pulsair fabric filter (Model 64S-8 20) (S013). Emissions from the fine granulated sugar industrial bag packaging line and the general warehouse area are collected by a single TORIT/Day Donaldson (Model 3-18) cartridge filter (S014). Selected points from the powdered sugar packaging line are collected and routed to a Sly fabric filter (Model STJ-1215-10WIP) (S015). All the sugar captured by the control devices is recycled to the production system. The starch unloading (S009) was previously controlled by a cartridge filter system. During the preparation of the renewed Operating Permit the cartridge filter system was removed and the emissions routed to the Sly fabric filter system serving the selected points on the powdered sugar packaging line(S015). This results in one less emission point but the same amount of emissions.

H1. Applicable Requirements - Colorado Construction Permit 96MR006 was issued for this emission unit. As with the beet pulp dryers, this emission unit is subject to the particulate matter standard of Colorado Regulation No. 1, Section III.C.1.a. calculated from the equation $PE = 3.59(P)^{0.62}$, where PE = particulate emissions in pounds per hour, and P = Process weight rate in tons per hour. The equation would set a limit of 20.4 pounds per hour for the maximum design rate of

16.5 tons per hour. The activities are also subject to the 20% opacity limitation.

H2. Emission Factors - Specific emission factors for this activity are not available from published sources. The emission factors used in the Operating Permit were based on applicant and manufacturer guaranteed values for control equipment. The emission factors are listed below.

A previous modification of the existing Operating Permit was made to incorporate an additional sugar dust control device and additional sugar dust pickup points along the powdered sugar production line. These changes were made to satisfy the requirements of the NFPA life/safety provisions. The existing control device continues to control the emissions from the fine granulated sugar packaging line. Additional pickup points may be added in the future as necessary. An emission limit of 2.30 tons per year was established for the new control device based on a worst case scenario.

The following table summarized the changes made:

Source	Production Rate Tons per Year	Emission Rate Pounds/Ton	Permit Limits PM_{10}, TPY
Powder Mill	66,000	0.09545	3.15
Powder Mill	66,000	0.09545	3.15
Packer	66,000	0.01727	0.57
Warehouse	66,000	0.002545	0.08
Starch	66,000	0.001210	0.04
Selected Powdered Sugar	66,000	0.06970	2.30
TOTAL	66,000	0.2816	9.29

H3. Monitoring - Conditions 9.1 to 9.4 of the Operating Permit list the monitoring and recording provisions necessary to verify compliance with applicable requirements for these activities.

Daily operating hours are recorded for use in calculating emissions for compliance, fee, and inventory purposes. Compliance with the hourly limitation (In Compliance by Calculation), is ensured by maintaining and operating the control devices in accordance with the manufacturer's recommendations to minimize emissions. Records of sugar production are also kept as an additional check. Records of maintenance are kept. Emissions sufficient to result in a visible plume would essentially mean the loss of many tons of sugar. The opacity monitoring is the same as described for sugar granulators discussed above.

H4. Compliance - The activities are currently considered in compliance with all applicable requirements.

I. Construction Permit Exempt/APEN Required Sources

Mass balance calculations by Western Sugar identified the release of ammonia emissions of approximately 32 tons per year. A large amount of the ammonia emissions are related to the washing of the beets and beet material. The Division has identified the emissions as facility-wide emissions as opposed to point source. Ammonia is a State-only non-criteria reportable pollutant classified as a Bin C chemical in Appendix A of Colorado Regulation No. 3. The APEN reporting

thresholds for Bin C chemical are 1000, 2500 and 5000 pounds per year.

The ammonia emissions are created by the breakdown of the protein in the beets. While the 20% opacity limit is an applicable requirement for all emission sources, the Division believes there will not be any opacity associated with the ammonia emissions. On the basis of no opacity being associated with the ammonia emissions, the 20% opacity is shown in the permit summary table as an applicable requirement but no opacity monitoring is required.

IV. Insignificant Activities

A list of insignificant activities is provided in Appendix A of the Operating Permit. Western Sugar has prepared a comprehensive list of insignificant activities for this facility. The list will be useful during site inspections to determine what equipment is not relevant to inspections.

A natural gas fired boiler (10.46 MMBtu/hour Cleaver Brooks, Model CB760-250, Serial Number L-35634) is used to condition sugar or keep molasses warm enough to pump during times of the year when the main boilers are not operating and the weather is cold. This boiler, known as the summer boiler, is typically operated from February into early May. The boiler has no emissions control devices and the estimated emissions for 2950 hours of operation per year are below the APEN reporting threshold, making the boiler an insignificant source of emissions. The typical boiler use is less than 2000 hours per year. This boiler has been the subject of confusion since the first Title V Operating Permit was issued because of the difference between the potential emissions and the actual emissions. The boiler, installed and placed in operation in 1965, has grandfather status from construction permit requirements since the construction date is prior to February 1, 1972. The potential emissions must be based on the potential to operate 8760 hours per year since the boiler is not subject to any federally enforceable limits. However, the actual uncontrolled emissions are estimated from the actual number of hours per year of operation as noted above. The initial Operating Permit identified the boiler as an insignificant source and noted the potential for the boiler to be a significant source if the number of operating hours increased. An APEN, dated February 28, 1995, reported the actual uncontrolled emissions at levels equivalent to full time operation, and great enough to classify the boiler as subject to APEN reporting for payment of annual fees while being exempt from a construction permit because of the grandfather status. A modification of the Operating Permit reflected this change. The most current APEN on file for the boiler, dated December 21, 2000, reports the actual uncontrolled emission values to be less than the APEN reporting threshold, and returns the boiler to the insignificant source category for this renewal of the Operating Permit.

V. Alternative Operating Scenarios

The existing Operating Permit note the existing control device for the conveyor transfer points and silo filling would be upgraded sometime after the permit was issued. This project is still pending at the time of this permit renewal. The source will operate under one set of conditions (6.1 - 6.4) prior to the project and another set of conditions (6.5 - 6.8) after the project is completed.

VI. Permit Shield

The following items were identified by the applicant as specifically non-applicable to their facility:

1) Colorado Regulation No. 1, Section VI.B., New Sources of Sulfur Dioxide.

2) Colorado Regulation No. 6, Part B, II.D.1., Standards of Performance for New Stationary Sources, Standard for Sulfur Dioxide.

3) Colorado Regulation No. 6, Part B, II.D.1., Standards of Performance for New Stationary

Sources, Standard for Particulate Matter.
The two coal fired boilers (S001) are exempt from these regulations as the boilers were constructed prior to the 1977 applicability date.
4) Colorado Regulation No. 6, Part B, III., Standards of Performance for New Stationary Sources, Standards of Performance for New Manufacturing Processes.
Units S002 - S007 are exempt from this regulation as they are manufacturing processes constructed prior to the January 30, 1979 applicability date.

VII. Accidental Release - 112(r)

Section 11(r) of the Clean Air Act mandates a new federal focus on the prevention of chemical accidents. Sources subject to these provisions must develop and implement risk management programs that include hazard assessment, a prevention program, and an emergency response program. They must prepare and implement a Risk Management Plan (RMP) as specified in the Rule.

Based on the information provided by the applicant, this facility is not subject to the provisions of the Accidental Release Prevention Program (Section 112(r) of the Federal Clean Air Act).

VIII. Standard Wording Changes

In the time since this Operating Permit was first issued the standard wording used by the Division in the Title V permits has changed or been added in response to regulatory changes or in response to issues identified during source and EPA reviews. These languages changes have been incorporated in this permit renewal.